DOCUMENT RESUME

ED 369 285 FL 022 066

AUTHOR Lewis, Philip
TITLE The Acquisition of Clicks by Non-Mother-Tongue Speakers.
PUB DATE Jul 94
NOTE 18p.; Paper presented at the Conference on Linguistics for the Language Professions (Stellenbosch, South Africa, April 1994).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *African Languages; Distinctive Features (Language); Elementary Education; Foreign Countries; *Language Proficiency; *Phonemics; Phonetics; Phonology; *Second Language Instruction; Second Language Learning; Uncommonly Taught Languages
IDENTIFIERS *Click Phoneme; *Xhosa

ABSTRACT

This paper addresses the difficulty experienced by many non-mother-tongue speakers in acquiring the click sounds of the Xhosa language. Eighteen English- and Afrikaans-speaking students, aged 10 through 13, with no previous knowledge of Xhosa were instructed and tested in making the 15 different click sounds that occur in the Xhosa language. The results indicated that non-mother-tongue speakers found it easier to acquire certain click types than others. Dental clicks tend to be correctly produced more frequently than alveolar lateral clicks and alveopalatal clicks. Non-mother-tongue speakers often showed the tendency to produce clicks as voiceless and aspirated alveolar and velar stops. A second substitution process occurred when subjects produced alveopalatal clicks as dental or alveolar clicks. Other phonological processes involved in click acquisition are also examined, and tentative suggestions are made to ease the acquisition of clicks by non-mother-tongue speakers. One suggestion is that non-mother-tongue speakers should gradually acquire clicks by applying similar stages of acquisition to those that mother tongue speakers apply when they acquire clicks. (MDM)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 369 285

THE ACQUISITION OF CLICKS BY NON-MOTHER-TONGUE SPEAKERS

Philip Lewis
Cape Town College of Education
Private Bag
Mowbray
7705
Republic of South Africa

ABSTRACT

It is generally accepted that non-mother-tongue speakers acquiring Xhosa often encounter difficulties with the acquisition of clicks. This paper addresses this issue by focussing on some of the results obtained from 18 English- and Afrikaans-speaking children aged between 10;0 and 13;0, acquiring Xhosa as a third language in the primary school. The results firstly indicate that non-mother-tongue speakers find certain click types easier to acquire than other click types. Secondly, based on the manner in which clicks are acquired by non-mother tongue-speakers, this paper indicates numerous phonological processes that are operative in the acquisition of these sounds. Lastly, tentative suggestions are provided to ease the acquisition of clicks by non-mother-tongue speakers.

INTRODUCTION

The clicks, once regarded as "clacks" by the early missionaries of the Cape in the 1820's (Shepherd, 1940: 57), are exceptional as well as unusual sounds in that they not only occur as interjections or non-linguistic gestures in some languages, but they also occur in the consonant inventory of a limited number of languages spoken in Africa (Roux, 1989b). Such sounds also occur in the Xhosa language[1]. There is a total of fifteen clicks occuring in the Xhosa language[2]. Table 1 presents the clicks occuring in Xhosa as well as the phonetic transcription for each of these sounds, together with the test items in which these sounds are found, as used in this study.

FL022066

BEST COPY AVAILABLE

PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Philip W. Lewis
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC).

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official

TEST SOUNDS		TEST ITEM
Orthographic transcription	**Phonetic transcription**	
I Dental clicks		
/c/	/ǀ/	icephe (spoon)
/nc/	/ⁿǀ/	incwadi (book)
/ch/	/ǀʰ/	isichotho (hail)
/gc/	/ǀ̬/	isigcawu (spider)
/ngc/	/ⁿǀ̬/	ingcwaba (grave)
II Alveo-palatal clicks		
/q/	/ǃ/	iqanda (egg)
/nq/	/ⁿǃ/	inqwelo (waggon)
/qh/	/ǃʰ/	isiqhamo (fruit)
/gq/	/ǃ̬/	ugqirha (doctor)
/ngq/	/ⁿǃ̬/	umngqusho (porridge)
III Alveolar lateral clicks		
/x/	/ǁ/	ixesha (time)
/nx/	/ⁿǁ/	inxili (pouch)
/xh/	/ǁʰ/	ixhego (old man)
/gx/	/ǁ̬/	igxalaba (shoulder)
/ngx/	/ⁿǁ̬/	ingxowa (bag)

Table 1 List of clicks occurring in the Xhosa language

Apart from being extremely rare sounds, clicks are also generally regarded as being very difficult sounds to acquire, even by mother tongue speakers (Lewis, 1994). This claim is based on research which indicates that clicks are acquired relatively late by Xhosa-speaking children (see Lewis, 1994; Roux, 1989a), as well as being among the last sounds to be acquired by Zulu-speaking children (Lanham, 1969).

Although these sounds occur in numerous languages in South Africa, they do not occur in the consonant inventory of English or Afrikaans, two other languages spoken in South Africa[3]. One can imagine, based on the relative difficulty mother tongue speakers have in acquiring clicks, that these sounds would also be very difficult for non-mother-tongue speakers to acquire. Unfortunately, very little research, apart from Doke (1926), ~~Mowrer & Burger (1991)~~, Lewis (1994) and possibly a few others, has been recorded or even undertaken to substantiate this point. For instance, very little has been documented about which click types are more easily acquired than others by non-mother-tongue speakers. Furthermore, very little has been documented on the phonological processes that are operative in the acquisition of these sounds by this specific group. This paper will focus on some of these issues.

The aim of this paper is to

(1) indicate those click types that non-mother-tongue speakers acquire more easily than other click types;

(2) indicate phonological processes that are applied by non-mother-tongue speakers to acquire clicks; and lastly

(3) mention tentative suggestions that can lead to easier acquisition of clicks.

Although this paper will discuss primarily the acquisition of clicks by non-mother-tongue speakers, it will also compare these results to the acquisition of clicks by mother tongue speakers[4].

METHOD

Subjects

Eighteen children acquiring Xhosa as a third language in the primary school, six from each of the standards 3, 4 and 5, ranging between the ages 10;0 and 13;0, were identified to participate in the research[5]. In each of the age groups there were three English- and three Afrikaans-speaking children. All eighteen subjects were regarded by the Xhosa teacher as "average achievers". None of the subjects had much or even any informal exposure to the Xhosa language outside the classroom.

Material

The fifteen clicks occuring in Xhosa were tested. Although articulation tests are in most cases elicited in the initial, medial and final positions in words (Grunwell, 1983), all the test sounds (i.e. clicks) for this investigation were tested in the intervocalic positions, because Xhosa consonants rarely occur in initial or final positions. After consulting two Xhosa dictionaries, McLaren (1981) and Nabe, Dreyer & Kakana (1985), 17 words that contain the test sounds were chosen. The words containing the test sounds had to fulfil the following criteria:

- they had to be depicted by line drawings; and
- had to be regarded in general as "familiar" to the subject group.

In Table 1 a list of the test sounds as well as the words in which these test sounds are used can be found. Of the 17 pictures depicting these words, 15 represented objects named by the test item, while the other two pictures were pretest items[6].

Elicitation

Three types of elicitation tests were applied. The three types were imitation, sentence completion and sentence recall (see Lewis, 1994: 12 - 13 on the three methods of elicitation that were applied to test subjects' articulation of clicks).

Procedure

Each subject was tested individually. The recording equipment used in the investigation consisted of a SONY Cassette Corder TCM-2 and an Electret condensor microphone. After rapport was established, each subject was asked to look at the file containing pictures of the test items. Imitation, sentence completion and sentence recall were used with the two pretest pictures and then testing proceeded in the manner described above[7].

Trascription of subjects' responses

All responses made by the subjects were transcribed by four independent transcribers. A broad transcription was made of all the responses. All responses were transcribed

according to the International Phonetic Alphabet. Transcriptions of each subject's productions were accepted as final when at least two of the four transcribers agreed on them.

RESULTS AND DISCUSSION

1. Ease of acquisition of clicks

School teachers and linguists have often been asked by non-mother-tongue speakers, which click type is commonly regarded as being the easier or more difficult to acquire. In order to determine this, percentages of correct production for each click by each of the non-mother-tongue speaking subjects was calculated[8]. Subjects had to attempt a sound at least three times to have performace on that sound included in this analysis. 66,6% was set as the criterion of correct production for a subject to have "acquired" each click. Table 2 presents the percentage of subject across all ages to have acquired each of the 15 clicks in Xhosa. For example the voiceless dental click is 67%, whereas for the voiced alveolar lateral click it is 6%.

	Age groups				
sound	**10;0 - 11;0**	**11;0 - 12;0**	**12;0 - 13;0**	**Total**	**%**
ǀ	1/6	6/6	5/6	12/18	67%
ǁ	3/6	6/6	2/6	11/18	61%
ǀʰ	0/6	3/6	2/6	5/18	28%
ǀ̬	0/6	3/6	1/6	4/18	22%
ǁ̬	3/6	5/6	1/6	9/18	50%
ǃ	0/6	2/6	3/6	5/18	28%
ǃ̃	0/6	2/6	2/6	4/18	22%
ǃʰ	1/6	0/6	3/6	4/18	22%
ǃ̬	0/6	1/6	1/6	2/18	11%
ǃ̰	4/6	3/6	2/6	9/18	50%
ǂ	3/6	5/6	4/6	12/18	67%
ǂ̃	3/6	6/6	3/6	12/18	67%
ǂʰ	2/6	0/6	0/6	2/18	11%
ǂ̬	0/6	1/6	0/6	1/18	6%
ǂ̰	1/6	3/6	2/6	6/18	33%

Table 2 Results indicating percentage of subjects across all ages (10,0 - 13;0) to have produced each of the clicks correctly

Figure 1 indicates the mean pooled values of the percentage of subjects, across all ages, to have produced the three click types correctly.

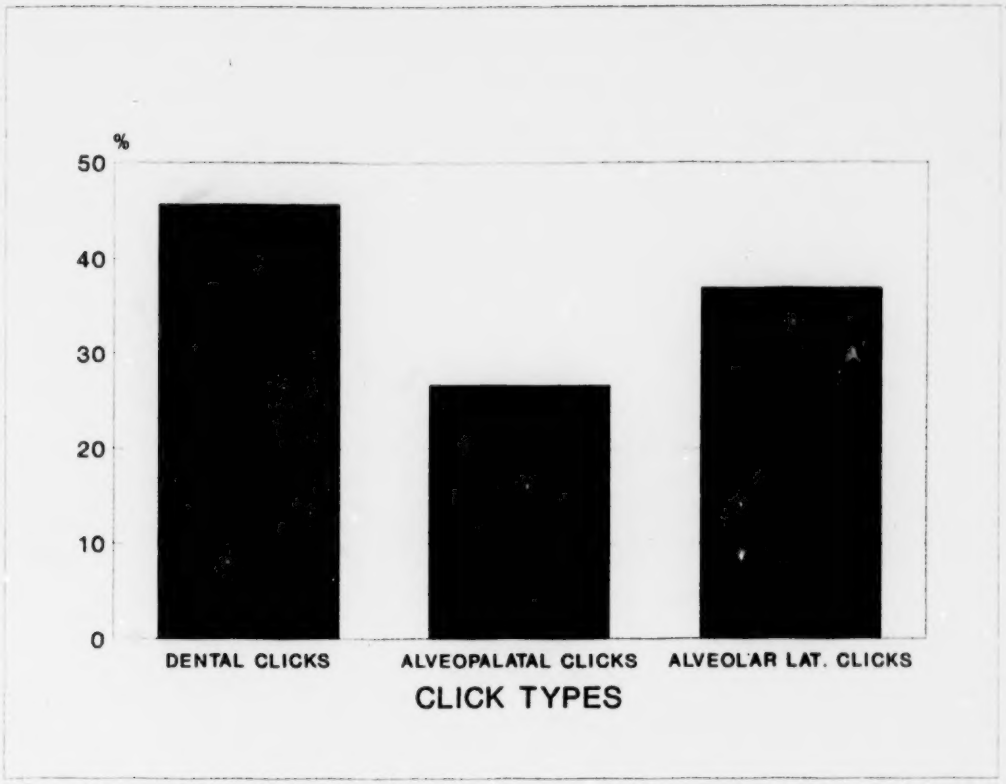

Figure 1 The mean pooled values of the percentage of non-mother-tongue speakers to have produced each of the click types correctly

The results in Figure 1 indicate that the dental click type (45,6%) tends to be correctly produced more frequently than the alveolar lateral click type (36,8%) and the alveopalatal click type (26,6%), by non-mother-tongue speakers. Therefore, based on these results, one can assume that the dental click type is the easiest of the three click types to be acquired by non-mother-tongue speakers, followed by the alveolar lateral click type and then the alveopalatal click type. These results, indicating that the alveopalatal click type is the more difficult click type to acquire, also corresponds with Doke's (1926: 129) analysis on the acquisition of Zulu clicks by non-mother-tongue speakers. He mention that the alveopalatal click - it is uncertain whether this refers to all the alveopalatal clicks, or only the voiceless alveopalatal click - "generally proves to be the most difficult for a European to acquire".

Based on the results indicating that alveopalatal clicks are more difficult to acquire, it is no wonder that Xhosa speaking people often enjoy asking non-mother-tongue speakers, who

are acquiring or studying Xhosa as a third language, to say as well-known Xhosa phrase in order to see if they have mastered the clicks. The phrase, which consists primarily of the alveopalatal click type, is as follows in (1).

(1) "Iqaqa liziqikaqike kuqaqaqa laqhawuka uqhoqhoqho"
(The pole-cat rolled itself in the couchgrass and broke its trachea")

2. Phonological processes operative in the acquisition of clicks by non-mother-tongue speakers

There is to date very little research available to indicate the various phonological processes applied by non-mother-tongue speakers when acquiring clicks. Research by Lewis (1994) sheds some light on this issue. Numerous phonological processes are proposed by him to describe the phonological tendencies occuring among non-mother-tongue speakers. This paper will briefly focus on the application of phonological processes by non-mother-tongue speakers. It will also compare the percentage frequency of occurrence of such processes to that of the phonological processes that are likewise applied by mother tongue speakers. The criteria, both qualitative and quantitative, that were applied to validate the presence of such phonological processes can be found in Lewis (1994: 37-38). Table 3 provides a list of the major phonological processes and sub-processes that are involved in the acquisition of clicks by non-mother-tongue as well as mother tongue speakers. The percentage frequency of occurrence of each of the major processes is applied in this paper only to indicate those processes that are more favoured by the specific subject groups. More detail concerning the percentage frequency of occurrence of each of the phonological processes, as well as a more detailed account of each of the processes describing the phonological tendencies, occurs in Lewis (1994).

Processes	Mother tongue speakers %	Non-mother tongue speakers %
Simplification processes Alveolar simplification Velar simplification	35%	14%
Substitution processes Delateralisation Depalatalisation Dedentalisation	8%	19%
Reduction processes Primary element reduction Cluster reduction Accompaniment reduction	53%	50%
Nasalisation processes Nasalisation Prenasalisation Postnasalisation	3%	16%

Table 3 Major phonological processes and sub-processes involved in the acquisition of clicks by both non-mother-tongue and mother tongue speakers.

Figure 2 provides a graphic representation of each of the major phonological processes by non-mother-tongue speakers as well as mother tongue speakers.

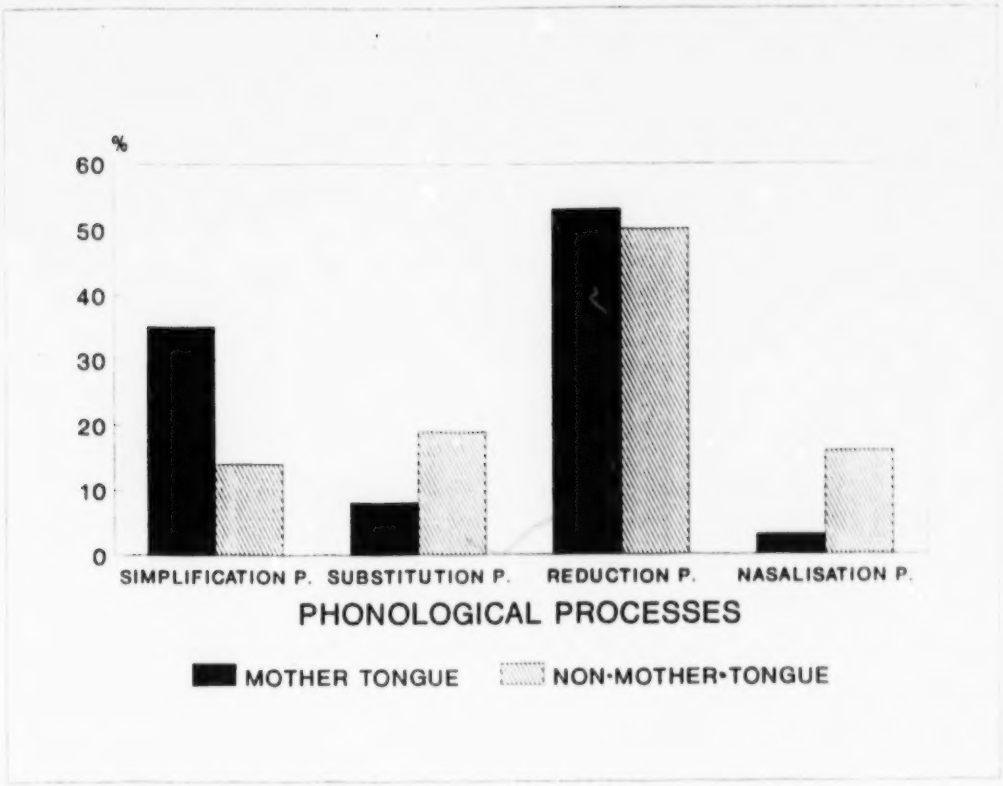

Figure 2 Graph representing frequency of occurrence of each of the major phonological processes

The content of these processes will now be discussed.

Simplification processes

Non-mother-tongue speakers often showed the tendency to produce clicks as voiceless and aspirated alveolar and velar stops. Two types of simplification processes were identified, based on these tendencies. In the first of the two processes, i.e. **alveolar simplification**, subjects would simplify clicks to voiceless and aspirated alveolar stops. Examples illustrating this process occur in (2).

(2) /i|ɛpʰɛ/ > [it'ɛpʰɛ]
/i!anda/ > [it'anda]
/isi!ʰamɔ/ > [isitʰamɔ]
/i‖ɛʃa/ > [it'ɛʃa]

In **velar simplification**, subjects would simplify clicks to voiceless and aspirated velar stops. This process is indicated by the following tendiencies in (3).

(3) /isi|ʰɔtʰɔ/ > [isikʰɔtʰɔ]
/isi|awu/ > [isik'awu]
/i!anda/ > [ik'anda]
/i‖ɛʃa/ > [ik'ɛʃa]

Substitution processes

In this phonological process subjects often applied the incorrect click type when producing the target sound. Three types of substitution processes were identified based on subjects' production tendencies. The first process, regarded as **delateralisation**, occurred when subjects produced dental or alveopalatal clicks in place of alveolar lateral clicks. The following tendencies in (4) illustrate this process.

(4) /i‖ɛʃa/ > [i|ɛʃa]
/i‖ili/ > [i|ili]
/i‖alaɓa/ > [i|alaɓa], [i!alaɓa]

A second substitution process, regarded as **depalatalisation**, occured when subjects produced alveopalatal clicks as dental or alveolar lateral clicks. In (5) the following tendencies occurred that illustrate this process.

(5) /i!anda/ > [i|anda], [i‖anda]
/isi!ʰamɔ/ > [isi|ʰamɔ], [isi‖ʰamɔ]
/um!uʃɔ/ > [um|uʃɔ]

In **dedentalisation** subjects would produce dental clicks as alveopalatal or alveolar lateral clicks. The tendencies in (6) illustrate this process.

(6) /i͡ǀwadi/ > [i‖wadi]
/iǀɛpʰɛ/ > [i!ɛpʰɛ]

It is interesting to note in Table 3 and Figure 2 than non-mother-tongue speakers applied the above-mentioned substitition processes more frequently, 19% in total, in comparison to mother tongue speakers (8%). Results also indicate that non-mother-tongue speakers resort more to substitution processes (19%) than simplification processes (14%) when acquiring clicks. One can assume, based on these results in Table 3, that non-mother-tongue speakers are aware of the clicks and will attempt to produce the click even though it is not the correct click type.

Reduction processes

In this phonological process, subjects would often reduce an element of the click, be it the click itself or the accompaniment of the click. There was even the tendency by subjects to reduce one or more of the consonants in a cluster. It is based on these tendencies that three types of reduction processes are identified. In the data numerous tendencies indicated that a click was often reduced with only its accompaniment remaining. The tendencies in (7) provide examples of this process, regarded as **primary element reduction**.

(7) [i͡ǀwadi/ > [inwadi]
/isi͡ǀawu/ > [isigawu], [isidawu]
/u͡!ixa/ > [ugixa], [udixa]

The second reduction process to be identified involves **accompaniment reduction**. In this process the click is reduced of its accompaniment(s) with only the click remaining. The following tendencies illustrating this process occur in (8).

(8) /isi͡ǀawu/ > [isiǀawu]
/i͡ǀwaba/ > [iǀwaɓa]
/isi!ʰamɔ/ > [isi!amɔ]
/i‖ʰɛgɔ/ > [i‖ɛgɔ]

Lastly, in the process regarded as **cluster reduction process** speakers would reduce clusters of consonants by deleting one of the consonants in that cluster. The following tendencies in (9) illustrate this process.

(9) /i!̃wɛlɔ/ > [i!̃ɛlɔ]
/i|̃wadi/ > [i|̃adi], [wadi]
/i|̰waɓa/ > [i|aɓa], [waɓa]

Nasalisation processes

It was frequently observed, especially among non-mother-tongue speakers (16%) (see Table 3), that a click is often produced with a nasal element attached to it. Based on the tendencies of non-mother-tongue speakers to nasalize clicks, three nasalisation processes are identified.

The first process, regarded as **nasalisation**, is a tendency among subjects, as indicated in (10), to nasalize non-nasal clicks.

(10) /i|ɛpʰɛ/ > [i|̃ɛpʰɛ]
/i!anda/ > [i!̃anda]
/i‖ʰɛgɔ/ > [i‖̃ɛgɔ]

A second nasalisation process, regarded as **prenasalisation**, is a tendency by subjects to prenasalize clicks as well as alveolar and velar stops. The following tendencies in (11) illustrate this process.

(11) /i‖ɛʃa/ > [in‖ɛʃa]
/i|ɛpʰɛ/ > [int'ɛpʰɛ]
/i!anda/ > [in!anda], [iŋ̟k'anda]

In **postnasalisation**, two types of nasal release processes occured, i.e. a normal postnasalisation, as indicated in (12).

(12) /i|ɛpʰɛ/ > [i|nɛpʰɛ]
/isi!ʰamɔ/ > [isi!namɔ]

and the nasalising of the following vowel or semivowel, as illustrated in (13).

(13) /i͡ǀwadi/ > [i͡ǀw̃adi]
/i‖ɛ͡ʃa/ > [i‖ɛ̃͡ʃa]

If one compares the percentage frequency of occurence of the nasalisation processes in Table 3, results clearly indicate that non-mother-tongue speakers (16%) apply this phonological process more than mother tongue speakers (3%) do in acquiring clicks.

3. Tentative sugestions that can ease the acquisition of clicks

As it has been generally accepted, and indicated in this paper, that clicks are rather difficult sounds to acquire, as well as being generally feared by non-mother-tongue speakers, this paper provides tentative suggestions that can possibly ease the acquisition of these sounds. These suggestions are based on tendencies that were identified by Lewis (1994) in both non-mother-tongue and mother tongue speakers' acquisition of clicks. Two approaches are mentioned.

The first approach that one can use to possibly ease the acquisition of clicks, is to apply similar stages of acquisition to those that mother tongue speakers apply when they acquire clicks. Lewis (1994), based on the data in his investigation, indicates that four stages of click acquisition occur. The four stages of acquisition are as follows:

- avoidance of words containing clicks;
- avoidance of words as well as the production of clicks as alveolar and velar stops;
- occurrence of click production, even though they do not reach the criteria of acquisition, in place of alveolar and velar stops;
- clicks indicate tendency to be acquired. Those that are not acquired indicate stable production.

Therefore, by applying such stages in acquiring the clicks, non-mother-tongue speakers could gradually acquire clicks in a similar manner to that in which mother tongue speakers acquire clicks.

A second approach that could possibly ease the acquisition of clicks is based on the tendency by non-mother-tongue speakers to nasalize click types. In Table 3 and Figure 2, results indicate that non-mother-tongue speakers (16%) nasalize clicks more than mother tongue speakers (3%) do. Therefore, based on this specific occurrence mentioned above, non-mother-tongue speakers who are acquiring Xhosa and find difficulty with the

production of clicks could apply a strategy of simply nasalising all clicks. Once a person can produce a click type that is assisted by the nasal element, the nasal element could be deleted leaving only the click element behind.

CONCLUSION

This paper has focused on three issues which generally speaking have not been formally addressed before in research on the acquisition of clicks by non-mother-tongue speakers. The results indicate that dental click types show the tendency to be acquired more easily than alveopalatal click types. Secondly, the results also indicate that there are four major phonological processes operative in the acquisition of clicks by this subject group. Lastly in view of the degree of difficulty with which these sounds are acquired, two suggestions are provided that may at least make the acquisition of clicks more "user friendly" for non-monther-tongue speakers.

FOOTNOTES

1 Xhosa is a Bantu language which is spoken in South Africa and belongs to the Nguni group of Bantu languages of Southern Africa. The language is predominantly the vernacular of the Transkei and Ciskei as well as of a large portion of the Xhosa-speaking people living in the eastern Cape and large industrial areas of South Africa.

2 Xhosa has three click types, i.e. the dental click, the alveo-palatal click and the alveolar lateral click. Each of the three click types are able to occur with one of five different accompaniments, these being either voiceless, nasalized, aspirated, voiced or voiced nasalized (for further details on the click types in Xhosa see Lewis, 1994).

3 Roux (1989b) states that the main language groups of Southern Africa that utilize clicks are

Khoisan group- Nama (khoi), !Xoo (San)
Nguni group - Xhosa, Zulu, Swazi
Sotho group - Sesotho

In East Africa the languages that ulitlize clicks are Sandawe, Hadza and Dahalo.

4 Research on the manner in which mother tongue Xhosa-speaking children and aphasics acquire and lose clicks can be found in Lewis (1994). The age of the Xhosa-speaking children participating in the investigation ranged from 1;6 - 5;5.

5 The school that the eighteen pupils attended and where research was undertaken in 1992 is the Somerset West Primary School in Somerset West. The researcher is grateful to the headmaster, staff and pupils of the school for their assistance and co-operation during the course of this investigation.

6 The pictures depicting the words can be found in Lewis (1994).

7 All recordings of the subject groups' production of clicks are obtainable at the Phonetics Laboratory of the Department of African Languages at the University of Stellenbosch.

8 The application of this method is similar to the one used by Ingram, Christensen, Veach & Webster (1980) to determine an order of acquisition of word-initial English fricatiges and affricates.

BIBLIOGRAPHY

Doke, C.L. 1929. **The phonetics of the Zulu language.** Johannesburg: University of the Witwatersrand Press.

Grunwell, P. 1982. **Clinical Phonology.** London: Croom Helm.

Ingram, D., L. Christensen, S. Veach & B. Webster. 1980. "The acquisition of word-initial fricatives and affricates in English by children aged between 2 and 6 years". In Grace H. Yeni Komshian, James Kavanagh and Charles Ferguson (eds.) **Child Phonology, Vol. 1 Production.** New York: Academy press.

Lanham, L.W. 1969. "Generative Phonology and the analysis of Nguni languages". **Lingua, 24:** 155- 162.

Lewis, P.W. 1994. **Aspects of the phonological acquisition of clicks in Xhosa.** Unpublished M.A. thesis, University of Stellenbosch.

McLaren, J. 1991. **New Concise Xhosa Dictionary.** Cape Town: Longman Penguin Southern Africa (Pty) Ltd.

Mowrer, D.E. & S. Burger. 1991. "A comparative analysis of phonological acquisition of consonants in the speech of 2-6-year-old Xhosa- and English-speaking children". **Clinical Linguistics & Phonetics,** 5 (2): 139 - 164.

Nabe, H., P.W. Dreyer & G.L. Kakana. 1985. **Xhosa Dictionary.** Johannesburg: Educum.

Roux, J.C. 1989a. "Spraakverwerking vanuit 'n linguistiese oogpunt". **South African Journal of Linguistics,** 7.4: 154: 162.

_____ . 1989b. "On the phonetic representation of clicks in African languages". Proposal presented at the 1989 Kiel Convention of the International Phonetic Association. Kiel.

Shepherd, R.H.W. 1940. **Lovedale, South Africa, The Story of a Century 1841 - 1941.** Lovedale: Lovedale Press.